



## V.

# Support Action Plans

This section of *The Galveston Bay Plan* presents two actions plans that are intended to support the implementation of all nine of the previous action plans.

**Research** Current research efforts for Galveston Bay suffer from several problems that reduce their effectiveness. For example, much of the research is administered by state and federal agencies that focus on specific parts of the ecosystem or on specific environmental programs. None of these agencies have responsibility for the Galveston Bay Estuary as a whole and are often driven to provide information that will support an agency's ability to carry out its mission. To address this problem, *The Galveston Bay Plan* includes actions to convene a research coordination board, to identify important research needs, continue the State of the Bay Symposium, and to increase funding for Galveston Bay research (see page 221).

**Public Participation** Public participation and education are critical elements for the long-term successful management of the Galveston Bay Estuary. To ensure greater public interest in issues affecting the estuary, strong and sustained support of the ongoing citizens monitoring program, the citizens pollution reporting system, and other existing volunteer opportunities is encouraged. The development of additional volunteer opportunities and the improvement of environmental education programs for both youth and adults are also vital in securing the long-term commitment of an informed public to the protection of the estuary (see page 231).



# Research

## *The Galveston Bay Plan* Galveston Bay National Estuary Program

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### OVERVIEW OF THE ACTIONS

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| RSC-2:        | Identify research needs from an ecosystem perspective ..... | 227         |
| RSC-3:        | Continue State of the Bay process .....                     | 228         |
| RSC-4:        | Increase funding for Galveston Bay research .....           | 229         |

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### THE ISSUES

Scientific research plays an important role in environmental management. It forms the basis for models that predict or describe ecosystem functioning, justifies standards, and supports every aspect of the regulatory process. Although science alone cannot determine regulatory policy, without it there is no reasonable basis for regulation. An important strategy in *The Galveston Bay Plan* is to focus current research programs and increase research funding that will help the managers of the bay (i.e., the regulators) solve critical environmental problems. To manage the bay as an entire ecosystem, common research goals are needed to:

- Develop basic information on ecosystem structure, function, and productivity
- Focus scientific attention on management concerns of the bay
- Establish research priorities
- Coordinate and target funding
- Assure that research results are available to agencies and individuals who can utilize the findings and to the public at large

### Current Research Environment

Most research on Galveston Bay is conducted by independent researchers and university scientists funded by various agencies, although agencies also frequently give each other research grants. Among the major research funding groups for Galveston Bay projects are Texas Sea Grant, National Science Foundation, and NOAA, with additional research funding

from the U.S. Fish and Wildlife Service, Texas Water Development Board, Texas Parks and Wildlife Department, Texas Natural Resource Conservation Commission, and the U.S. Army Corps of Engineers. Other groups not traditionally associated with research that have recently funded Galveston Bay research projects are environmental groups and industrial/commercial associations.

Current research efforts for Galveston Bay suffer from several problems that reduce their effectiveness. For example, much of the research is administered by state and federal agencies that focus on specific parts of the ecosystem or on specific environmental programs. None of these agencies have responsibility for the Galveston Bay estuary as a whole and are often driven to provide information that will support an agency's ability to carry out its mission. Therefore relatively little research is conducted that looks at the cumulative effects.

Scientific information is dispersed within the research community, and important research results are often not transferred effectively to the people who need the information the most: resource managers and policy makers. In addition, the other members of the environmental decision making process, such as different stakeholders and the general public, do not get research results.

### **Scientists and Managers in a Cooperative Approach**

To change the current system to a ecosystem-based research approach, the difference between environmental scientists and environmental managers must be recognized. Generally speaking, scientists are interested in all of the infinite information that can be gathered about an estuary, so long as it contributes to new knowledge. Managers, by contrast, expect concise answers to certain short-term questions that help solve bay problems. Clearly, some sort of agreed-upon communications are necessary for these diverging views about information to be reconciled. Certain conceptual boundaries therefore apply to scientific activity aimed at providing information to managers:

- Managers must address the right questions, so that scientists have a role in identifying and ranking research projects.
- Selected projects must be undertaken in the context of a perturbed ecosystem, allowing that projects focus on impact dynamics rather than traditional ecology alone.
- Projects must provide data at a scale of resolution defined by management, including generalized geographic ordering of projects and sampling within projects.
- Results must be made available to managers in an accessible, useful format, requiring that data be converted to synoptic information.
- Ongoing work must fulfill a sensory feedback function to managers, requiring a monitoring program with a direct link to management objectives.



# Research

## *The Galveston Bay Plan* Galveston Bay National Estuary Program

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### OVERVIEW OF THE ACTIONS

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- Ongoing work must fulfill a sensory feedback function to managers, requiring a monitoring program with a direct link to management objectives.

Within these conceptual boundaries, a practical mechanism must then be agreed upon to tailor research to the particular ecosystem issues of concern. To prepare *The Galveston Bay Plan*, a process established by the National Estuary Program guidance was employed. A *Priority Problems List* identified and ranked estuarine management issues, serving as a focal point for consensus about where to begin. Generally, issues were advanced if they had a system-wide impact, impaired designated uses, or (more practically) if they could be quickly or cheaply fixed. The key feature of the *Priority Problems List* was that it be adopted by the consensus of managers, scientists, and bay stakeholders represented on the Management Conference. In the event of disagreement, managers carried the day, in observance of the first conceptual constraint listed above.

To managers, the best use of the *Priority Problems List* was to prevent distractions from scientists seeking to fund projects which did not help managers. To scientists, the list became a set of broadly-stated hypotheses to be strengthened or refuted. The GBNEP characterization studies were part of the process to test these hypotheses, and several surprising conclusions resulted in refuting of some long-held conventional wisdom about the Galveston Bay. The *State of the Bay Report* summarizes some of the conclusions resulting from the GBNEP characterization process.

### *The Galveston Bay Plan*

Creation of *The Galveston Bay Plan* resulted in the identification of numerous research needs tied to the various action plans (summarized in Appendix E). Without a coordinated program to review, rank, and carry out this research in an ecosystem management context, the information base available to bay managers will not match the actions to address the bays problems.

Research is therefore an important part of *The Galveston Bay Plan*, and *The Plan* lays out an ecosystem-based approach that links scientists and managers. It employs a similar philosophy to the one used in the GBNEP process described above for short term research: lay out a general mechanism where managers and researchers can work together. The following actions describe such a process for focusing research, improving communication between scientists and resource managers, and effective dissemination of results that will answer more immediate questions about the bay in such a way that bay managers benefit.

For research with maximum value to the community of the Galveston Bay System, the Galveston Bay Program can be an effective interlocuter. They can assist bay managers to find the scientists who provide the scientific answers on which immediate decisions are needed, the bottom line short term questions. They can assist scientists who research natural processes in the estuary to locate supportive funding from managers cognizant that fundamental questions will continue to thwart management, the basic questions of longer range problems. Beyond identifying the critical questions, Galveston Bay Program should assist both parties in the realities of available research monies and of the terribly expensive price of comprehensive ecosystem and process research. Hopefully scientists will be proceeding to find answers even before managers know the question.



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# RESEARCH ACTION PLAN

*To support and focus Galveston Bay research to improve our knowledge of the bay and its relation to human uses, including: 1) stimulation of creativity and excellence in research; 2) encouragement of research related to decision-making activities under The Galveston Bay Plan by regulatory and management agencies; 3) support of timely implementation of the goals and objectives of The Galveston Bay Plan for the Galveston Bay system; and 4) dissemination of findings to regulatory and scientific communities and the public.*

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## OVERVIEW

### **Goal:**

**To ensure that the basic and applied research that is required for Galveston Bay management decisions is available to managers.**

- Action RSC-1: Establish a research coordination board.
- Action RSC-2: Identify research needs from an ecosystem perspective.
- Action RSC-3: Continue *State of the Bay* process.
- Action RSC-4: Increase funding for Galveston Bay research.

## ACTION RSC-1: Establish a Research Coordination Board

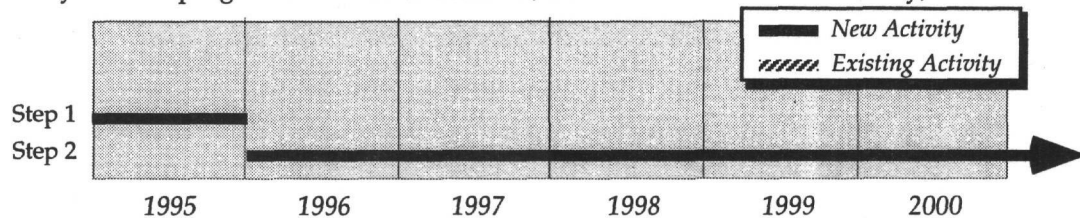
**What** Establish a committee or coordination body of technical experts comprised of research organizations, environmental management agencies, environmental research funding agencies, foundations, and other entities that either 1) direct and fund bay research, 2) manage the bay under existing or proposed regulatory programs, or 3) are important stakeholders involved in bay research.

### How

Step 1 Galveston Bay Program staff will work with the Galveston Bay Council to determine appropriate structure and representation for the RCB. This process should include input from management agencies, potential funding sources and research institutions.

Step 2 Galveston Bay Program will convene the RCB. Its principal activity during its first year will be to conduct the State of the Bay Symposium (RSC-3) and begin ranking research initiatives (RSC-2). The RCB will meet quarterly until its programs are well-established, and not less than semi-annually, thereafter.

### When



**Where** The RCB will convene in the Galveston Bay area.

**Who** Lead entity: Galveston Bay Program. Other participants: UT, TAMU, UH, Rice; WEF; SeaGrant, TWRI, TNRCC, GLO, TDH, RRC, TWDB, Galveston Bay Foundation, TPWD, EPA, Corps, USFWS, NMFS, USGS, TCC, SWCB, River Authorities, environmental groups, and industrial research groups. Role of Galveston Bay Program: Conduct Action.

### Public Costs of New Actions (5 years)

|                    |                   |
|--------------------|-------------------|
| • Program.....     | \$ 50,000         |
| • Others.....      | \$ 487,500        |
| <b>TOTAL .....</b> | <b>\$ 537,500</b> |

*This action only includes costs for developing new funding sources. The actual cost of new research has not been determined.*

**Related Actions:** RSC-2, RSC-3, and RSC-4.

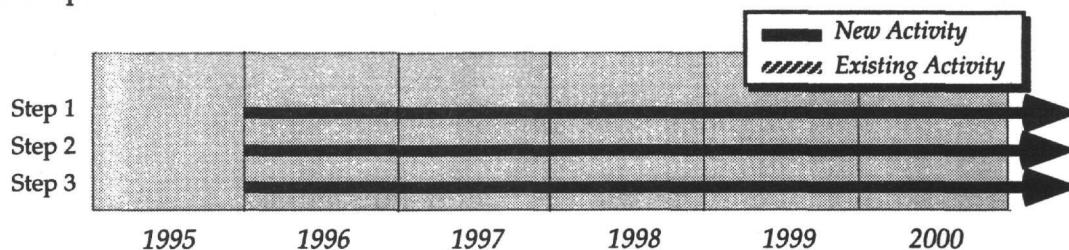
## ACTION RSC-2: Identify Research Needs From an Ecosystem Perspective

**What** Establish a process to rank research needs, correlate to available research, identify gaps, and encourage redirection of research as needed. Establish a mechanism to link ranking of research topics, involvement of both scientists and managers, and directing of funds.

### How

- Step 1** Galveston Bay Program and the RCB will develop a survey of scientists (agency, university, and other researchers), bay managers and users, private industry and the general public to identify research needs. These will be compared with symposium findings to identify gaps in basic and applied research. The RCB and the Galveston Bay Program staff will design a ranking method for research projects to be clearly prioritized. This priority list will be updated biennially, following each State of the Bay Symposium.
- Step 2** Galveston Bay Program and the RCB will match prioritized research needs with existing and potential funding sources. From this analysis, a funding plan will be prepared (RSC-4).
- Step 3** Galveston Bay Program and the RCB will develop research dissemination strategy, including provisions for the following:
- publication of Galveston Bay research in scientific and technical journals.
  - maintaining a research clearinghouse within the Galveston Bay Program, including a library, computer database and bibliography.
  - preparation and distribution of summaries of key research findings to bay users, managers and the general public.

### When



**Where** The Galveston Bay area.

**Who** Lead entity: Galveston Bay Program. Other participants: UT, TAMU, UH, Rice; WEF; SeaGrant, TNRCC, GLO, TDH, RRC, TWDB, Galveston Bay Foundation, TPWD, EPA, Corps, USFWS, NMFS, USGS, TCC, River Authorities, environmental groups, and industrial/commercial research groups. Role of Galveston Bay Program: Conduct Action.

### Public Costs of New Actions (5 years)

|                           |           |
|---------------------------|-----------|
| (Costs Included in RSC-1) |           |
| <b>TOTAL</b> .....        | See RSC-1 |

*This action only includes costs for developing new funding sources. The actual cost of new research has not been determined.*

**Related Actions:** RSC-1, RSC-3, RSC-4, and SP-4 (see Table of Research Needs).



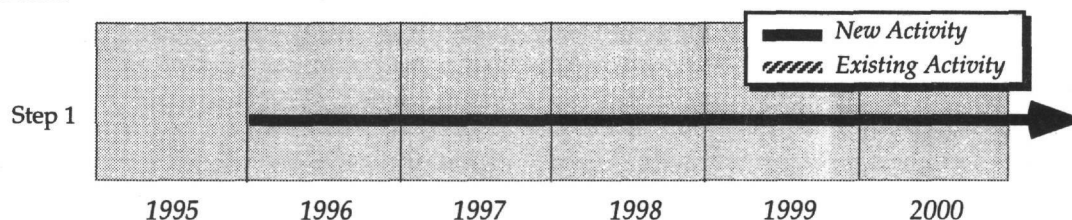
## ACTION RSC-3: Continue State of the Bay Process

**What** Continue the State of the Bay Symposium on a regular basis to discuss important management and technical issues related to Galveston Bay. More specifically, the Symposium will provide a forum for dissemination of research results; develop consensus for actions; encourage interaction among researchers, managers, and the public; and improve opportunities and visibility relevant to funding needs.

### How

**Step 1** Galveston Bay Program will convene State of the Bay Symposium. Findings will be utilized by Galveston Bay Program and its RCB to maintain current research priorities, and should also be summarized for broad public distribution. The Symposium will be conducted biennially to help keep the public involved in the process.

### When



**Where** The Galveston Bay area.

**Who** Lead entity: Galveston Bay Program. Other participants: UT, TAMU, UH, Rice; WEF, SeaGrant, TNRCC, GLO, TDH, RRC, TWDB, Galveston Bay Foundation, TPWD, EPA, Corps, USFWS, NMFS, USGS, TCC, River Authorities, environmental groups, and industrial/commercial research groups. Role of Galveston Bay Program: Conduct Action.

### Public Costs of New Actions (5 years)

|                    |                  |
|--------------------|------------------|
| • Program .....    | \$ 30,000        |
| <b>TOTAL .....</b> | <b>\$ 30,000</b> |

*This action only includes costs for developing new funding sources. The actual cost of new research has not been determined.*

**Related Actions:** RSC-1, RSC-2, RSC-4, and PPE-3.



## ACTION RSC-4: Increase Funding for Galveston Bay Research

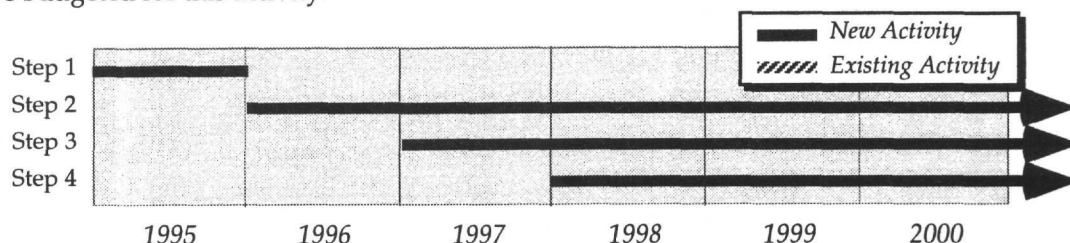
**Objective** To establish and maintain a system of priorities and funding for dissemination of research.

**What** Identify, establish, redirect, and leverage funding sources to increase funding for Galveston Bay research programs. Include federal, state, local, and private sources. Track research programs of other agencies and pending legislation that could increase funds available for coastal research (e.g., various Gulf of Mexico initiatives)

### How

- Step 1 Galveston Bay Program and the TSC should identify any short term "windows of opportunity" for funding, such as the GOMP, federal or state legislative initiatives and/or grants, or foundation funds. *The Galveston Bay Plan* research needs list, divided into basic and applied research, will serve as a guide.
- Step 2 Galveston Bay Program/RCB will continue to track funding opportunities and match them with research needs, as updated at State of the Bay.
- Step 3 Galveston Bay Program/RCB will link the prioritized list of research needs (RSC-2) with funding sources. These research needs should be incorporated into *The Galveston Bay Plan* so priorities can impact federal and state funding decisions. Funding gaps should be identified and included as federal and state legislative priorities for the Galveston Bay Program.
- Step 4 Galveston Bay Program/RCB will develop a strategy to expand foundation and private sector funding sources for Galveston Bay research. A proposal and presentation should be developed, and staff time should be budgeted for this activity.

### When



**Where** The Galveston Bay area.

**Who** Lead entity: Galveston Bay Program. Other participants: UT, TAMU, UH, Rice; WEF; SeaGrant, TNRCC, GLO, TDH, RRC, TWDB, Galveston Bay Foundation, TPWD, EPA, Corps, USFWS, NMFS, USGS, TCC, river authorities, environmental groups, and industrial/commercial research groups. Role of Galveston Bay Program: Conduct Action.

### Public Costs of New Actions (5 years)

|                    |                  |
|--------------------|------------------|
| • Program .....    | \$ 37,500        |
| <b>TOTAL .....</b> | <b>\$ 37,500</b> |

*This action only includes costs for developing new funding sources. The actual cost of new research has not been determined.*

**Related Actions:** RSC-1, RSC-2, and RSC-3.



# Public Participation and Education

## *The Galveston Bay Plan* Galveston Bay National Estuary Program

### OVERVIEW OF THE ACTIONS

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### THE ISSUES

Public participation and education are critical elements for the long-term successful management of the Galveston Bay Estuary. As a public resource, the bay should be managed to ensure its productivity and ecological diversity on a long-term, sustainable basis. In an era of severe constraints on both governmental and private sector funding, an educated and motivated public can provide much of the needed expertise, time, effort, and leadership to protect and monitor the bay. To this end, increased public involvement in bay management is strongly encouraged.

As the Galveston Bay Program begins implementing *The Galveston Bay Plan*, it is important that the public play a large role in determining the direction and focus of the Galveston Bay Program. For this reason, this action plan recommends that the Galveston Bay Program take a lead role in encouraging public participation in bay-related activities, providing educational materials about the bay to both youth and adults, providing information to the media concerning the status of the bay, continuing the State of the Bay Symposium, and stimulating the creation of new volunteer opportunities.

To ensure greater public interest in issues affecting the estuary, strong and sustained support of the ongoing citizens monitoring program, the citizens pollution reporting system, and other existing volunteer opportunities is encouraged. The development of additional volunteer opportunities and the improvement of environmental education programs for both youth and adults are also vital in securing the long-term commitment of an informed public to the protection of the estuary. *The Galveston Bay Plan* supports public involvement from all of the groups involved with this important estuary; urban and rural; residents from all parts of the watershed; and people of diverse socioeconomic and racial backgrounds.

## **CURRENT STATUS**

The participation of an educated public is critical for effective implementation of *The Plan*. Citizens need an understanding of the extent to which the Galveston Bay Estuary contributes to the quality of life of this area of Texas. The bay lacks the geographic or visual grandeur of San Francisco or Chesapeake Bays, and many Houston-area residents may go several years without actually seeing the bay. Yet Galveston Bay is extraordinarily important and productive from an economic standpoint, and the estuary exhibits ecological diversity unequaled by many better known or more scenic estuaries. It has been estimated that approximately 9 percent of households within Brazoria, Chambers, Galveston, Harris, and Liberty Counties earn income from activities directly associated with the bay, and the bay represents an important recreational resource for thousands of additional households.

Public involvement in issues which concern the bay is growing rapidly. Increasing numbers of citizens are active participants in such groups as the Gulf Coast Conservation Association (GCCA), the Galveston Bay Foundation (GBF), and the Audubon Society, and several of these organizations administer programs which directly involve volunteers with bay management issues.

A few examples of the many ongoing volunteer or public outreach programs are:

- A boater education program and pilot-marina pumpout project, carried out by GBF, aimed at reducing the discharge of untreated sewage to the bay from boats and marinas
- The citizens' monitoring program administered by GBF. As part of this program, trained volunteers sample and analyze bay waters for a suite of basic indicator parameters. The resultant data can be utilized in making management decisions concerning the bay.
- Bay Day, sponsored by GBNEP and GBF. Over 20,000 people attended the 1993 event, held at Sylvan Beach, in LaPorte, and more than 70 exhibitors, representing business, government, nature, heritage, and recreation, demonstrated how their activities are tied to preservation of a healthy estuary.
- Annual bird counts, sponsored by the Audubon Society

- The Galveston Bay Ambassadors Program, sponsored by GBF and SCS, which provides environmental education concerning the bay to students in the counties surrounding the bay
- Cord grass replanting, organized by the Marine Extension Service

Building upon the increase in public involvement and interest in the bay, GBNEP has reached out to the public as participants in development of *The Plan*. The public has volunteered numerous hours to participate in task force meetings, and attendance was excellent at a series of public meetings held during November 1992 at various locations in the bay area. To reach additional members of the public, GBNEP has sponsored the production of seven videos about the estuary, and has issued greater than 50 publications concerning various aspects of the estuary ecosystem.

In addition, GBNEP has initiated a Citizens Pollution Reporting System pilot project which has been well received. By calling the system (1-800-3-OUR BAY), members of the public can ensure that their complaint or incident report relating to air, land, or water will receive the attention and follow-up of the proper government agency.

## **THE ROLE OF GALVESTON BAY PROGRAM**

Education is a vital component of any long-term strategy to increase public participation in bay management issues. Currently, however, classroom education concerning local environmental issues is inadequate, and many schoolchildren lack even a fundamental grasp of the bay's location or role in commerce and the environment. Media reports concerning the bay often tend towards the sensational, and do not provide the foundation for a true understanding of bay-related issues. Much of the news regarding the estuary is good news, such as the dramatic water quality improvements which have been achieved in the Houston Ship Channel during the last two decades. Improved and sustained environmental education and reporting are needed to improve public understanding and participation in bay management issues. To raise the level of the discussion concerning the future of the bay, the Galveston Bay Program will act as a focal point for providing high quality information concerning the bay to youth, adults, and the media.

Current public outreach efforts carried out by state and federal environmental agencies, while valuable, tends to focus on general environmental concerns. Galveston Bay Program will have the ability to focus existing environmental outreach programs on an issue that affects everyone in this area of Texas: the future of the Galveston Bay Estuary.



# **PUBLIC PARTICIPATION AND EDUCATION ACTION PLAN**

*To establish effective, ongoing public involvement with Galveston Bay resource management efforts at all levels; to improve future stewardship through education of students and the adult public concerning the bay ecosystem; and to invoke the public commitment and political will necessary to achieve effective comprehensive management.*

## **OVERVIEW**

### **Goal:**

**Facilitate Public Involvement in Bay Policy and Management.**

- Action PPE-1: Establish citizen involvement as an integral part of the Galveston Bay Program.
- Action PPE-2: Continue and expand the State of the Bay Symposia.

### **Goal:**

**Increase education and outreach regarding issues affecting the estuary.**

- Action PPE-3: Develop and implement a long-range adult education and outreach program.
- Action PPE-4: Develop specific curricula for use in Galveston Bay watershed school districts.

### **Goal**

**Increase volunteer involvement in the ongoing stewardship of the estuary.**

- Action PPE-5: Continue to develop effective volunteer opportunities for citizens.

### **Goal:**

**Increase the ability of citizens to effectively report pollution events.**

- Action PPE-6: Maintain a citizen pollution reporting system.

### **Goal:**

**Expand and sustain local government involvement and support.**

- Action PPE-7: Develop and implement a strategy for informing, educating, and providing support for local government involvement.

**Goal:**

**Assure effective communication with and outreach to specific bay users groups.**

Action PPE-8: Provide assistance for user groups affected by implementation of *The Galveston Bay Plan*.



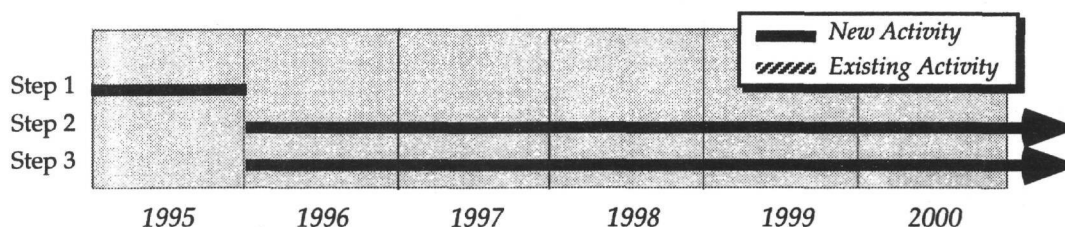
## ACTION PPE-1: Establish Citizen Involvement as an Integral Part of the Galveston Bay Program

**What** Establish citizen involvement as an integral part of the Galveston Bay Program, including the addition of permanent staff on the Galveston Bay Program with public participation responsibilities. Develop public involvement guidelines for implementing *The Galveston Bay Plan*.

### How

- Step 1 Galveston Bay Program will hire a full time Public Participation Coordinator to direct the public participation effort.
- Step 2 Galveston Bay Program will work with the existing GBNEP Citizen Advisory Steering Committee to include citizen representatives as members of the GBC.
- Step 3: Galveston Bay Program will initiate a public attitudes survey and present findings at the State of the Bay Symposium (coordinate with Actions PPE-2 and RSC-3). This survey should be conducted biennially to coincide with the State of the Bay Symposium. The Program will also ensure that there is adequate public participation in the development and implementation of any new regulatory programs (if any) required to implement *The Galveston Bay Plan*.
- Step 4 Galveston Bay Program will conduct a public involvement evaluation, assessing the effectiveness of public information and education efforts over the first two years of *The Galveston Bay Plan* implementation. This evaluation will be a part of the overall *Galveston Bay Plan* evaluation report, which the Program will develop biennially.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program. Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                   |                   |
|-------------------|-------------------|
| • Program.....    | \$ 580,250        |
| <b>TOTAL.....</b> | <b>\$ 580,250</b> |

Potential Sources of Funding: EPA

**Regulatory Issues** None.

**Related Actions:** PPE-2 and RSC-3.

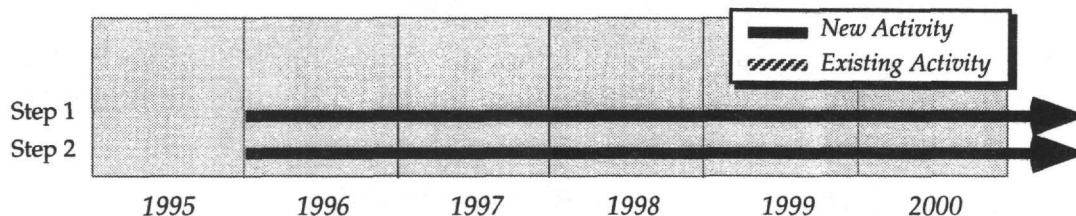
## ACTION PPE-2: Continue and Expand the State of the Bay Symposia

**What** Continue and Expand the State of the Bay Symposia.

**How**

- Step 1** Galveston Bay Program will expand the State of the Bay Symposium to include: a local governments section, a students section, and a citizens monitoring section. Galveston Bay Program staff will also present its biennial evaluation of implementation efforts. Galveston Bay Program public information staff will work to generate expanded media coverage and will coordinate with other public agencies so that the State of the Bay Symposium is promoted in their publications.
- Step 2** Galveston Bay Program will publish the proceedings of the Symposia, and make the Proceedings available to the legislature, the public, scientists, and governmental agencies.

**When**



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program. Other participants: GBF, Sea Grant, government agencies, universities, public and private schools, etc. Role of Galveston Bay Program: Conduct action.

**Public Costs of  
New Actions (5 years)**

|                   |                  |
|-------------------|------------------|
| • Program.....    | \$ 45,000        |
| <b>TOTAL.....</b> | <b>\$ 45,000</b> |

Potential Sources of Funding: EPA, NOAA, Department of Education, NSF, and private foundations.

**Regulatory Issues** None.

**Related Actions:** SD-5, SD-6, SD-7, and RSC-3.

## ACTION PPE-3: Develop and Implement a Long-Range Adult Education and Outreach Program

**What** Support the development and implementation of a long-range adult education and outreach strategy, focusing on effective utilization of the media.

### How

**Step 1 Public Communication:** Building on existing education materials, Galveston Bay Program will develop materials which clearly and accurately communicate information concerning the estuary to the public:

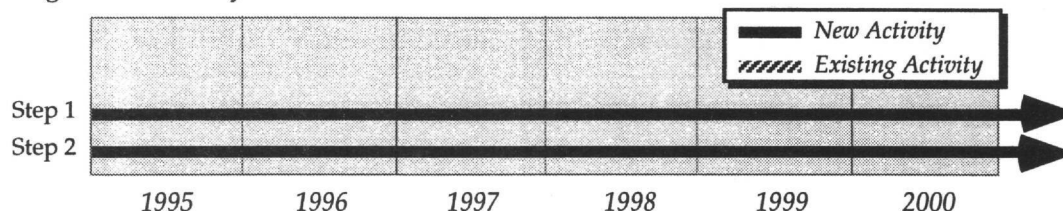
- A packet concerning the need for household hazardous waste disposal programs, and identifying existing programs (such as the City of Houston program)
- Information regarding risks associated with seafood consumption and contact recreation
- Environmental trends within the estuary. Develop a general environmental index for the bay to track its environmental status (for example, a "bay barometer", which is regularly published in local newspapers).
- Information on point source and non-point source reductions.
- A map which identifies all public access points and provides information on bay recreational activities, the ecology of the bay, and guidelines for preservation of bay habitat
- Press releases regarding key bay issues.

Galveston Bay Program will emphasize urban and upper watershed communities not traditionally concerned with bay issues; pursue an educational strategy which emphasizes a multi-cultural approach, and targets materials and efforts towards the entire spectrum of economic and ethnic groups.

The Galveston Bay Information Center will establish a Galveston Bay Estuary section under the Texas Armadillo electronic bulletin board, which can be accessed via Internet.

**Step 2: Media Relations:** Gal. Bay Program will hire a full-time public information officer (PIO) reporting to the Public Participation Coordinator to work towards more in-depth coverage of bay issues. The PIO will maintain regular contact with bay area reporters with news releases, press conferences, and news items. Galveston Bay Program will develop, publish, distribute, and regularly update a media guide which will assist the media to locate and receive information from individuals and groups which are involved in and are knowledgeable of the bay.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program. Other participants: GBF, governmental agencies with a role in bay management, and the media. Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                    |                   |
|--------------------|-------------------|
| • Program .....    | \$ 835,000        |
| <b>TOTAL .....</b> | <b>\$ 835,000</b> |

Potential Sources of Funding: EPA, USDA, NOAA, NSF, and private foundations.

**Regulatory Issues** None.

**Related Actions:** WSQ-1, WSQ-2, WSQ-5, NPS-4, SM-5, and SD-7.

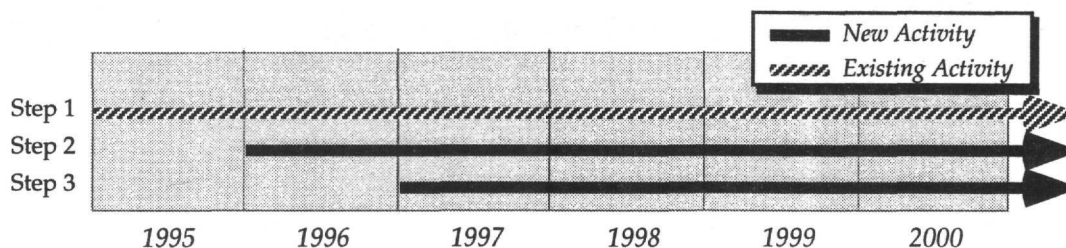
## ACTION PPE-4: Develop Specific Curricula for Use in Galveston Bay Watershed School Districts

**What** Support the development of specific curricula for use in Galveston Bay watershed school districts.

### How

- Step 1 GBF and SCS will continue to pursue funding and volunteer support to expand the Galveston Bay Ambassador Program, and advance achievement training programs for teachers in the region.
- Step 2 Galveston Bay Program will work with GBF and others to pursue additional sources of grant funding to develop Galveston Bay curriculum to teach essential environmental elements across all grade levels; and will support legislation to fund the environmental education mandates in SB 1340.
- Step 3 Galveston Bay Program will work with TNRCC, GBF, area school districts and Texas Education Agency (TEA) to develop a strategy for "marketing" bay-oriented lessons to area teachers. Elements of this strategy may include in-service training, TEA's Annual Science Summit, and after-school voluntary forums. This effort will be coordinated where possible with TNRCC's environmental education program.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program and GBF. Other participants: local schools and universities, TPWD, USFWS, SCS, State coordinating committee on environmental education, and the agricultural extension service. Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                    |                  |
|--------------------|------------------|
| • Program .....    | \$ 99,750        |
| <b>TOTAL .....</b> | <b>\$ 99,750</b> |

Potential Sources of Funding: EPA, NOAA, Department of Education, and NSF. Funds other than Section 320 funds will be used for potential school education programs.

**Regulatory Issues** Legislative note: Chapter 361, Section 11.53 of the Texas Health and Safety Code, as established by S.B. 1340, mandates environmental education programs in Texas' public schools. However, this mandate has not been funded to date. A bill to fund this measure through a license plate fee was introduced in the 1993 Texas Legislature, but failed.

**Related Actions:** SD-7, SD-5, and NPS-4.

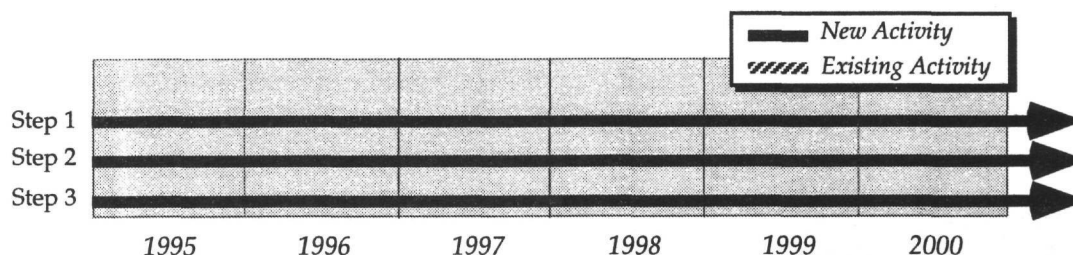
## ACTION PPE-5: Continue to Develop Effective Volunteer Opportunities for Citizens

**What** Continue to support the development of effective, attractive, and organized volunteer opportunities for citizens. Currently available volunteer opportunities include citizen monitoring, discharge permit review, cord grass replanting, volunteer teacher programs, debris pickup, storm drain painting, and the Bay Day Festival. To further involve the public, additional opportunities will be identified, funded, and implemented.

### How

- Step 1 Galveston Bay Program and the GBF will work together to ensure the effective continuation of the ongoing citizen monitoring program by conducting activities such as
- Secure long-term GBF funding for the ongoing citizen monitoring program.
  - Improve the link between citizen monitoring data and data collected by agencies for management purposes. Ensure that data for the citizen monitoring program is incorporated into the regional monitoring database.
  - A report documenting the results of the monitoring program will be published annually, with a summary report being presented at the State of the Bay Symposia.
  - Support expansion of the ongoing monitoring program to include additional parameters (e.g., fecal coliform) and ensure that critical geographic areas not being monitored by agencies are included.
  - Support continued participation of the citizen monitoring program in the Bay Day Festival.
- Step 2 The Galveston Bay Program Office should participate in and support Bay Day as a means of publicizing volunteer opportunities.
- Step 3 Galveston Bay Program will monitor *Galveston Bay Plan* implementation efforts and recommend to the GBC opportunities for citizen volunteer implementation.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program and GBF. Other participants: TNRCC, TDH, TPWD, all other governmental agencies with a role in bay management, other private volunteer groups, and the public. Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                    |                   |
|--------------------|-------------------|
| • GBF .....        | \$ 398,750        |
| • Program .....    | \$ 37,500         |
| <b>TOTAL .....</b> | <b>\$ 436,250</b> |

Potential Sources of Funding: EPA, NOAA, and NSF.

**Regulatory Issues** None.

**Related Actions:** PPE-3, SD-5, and HP-4.



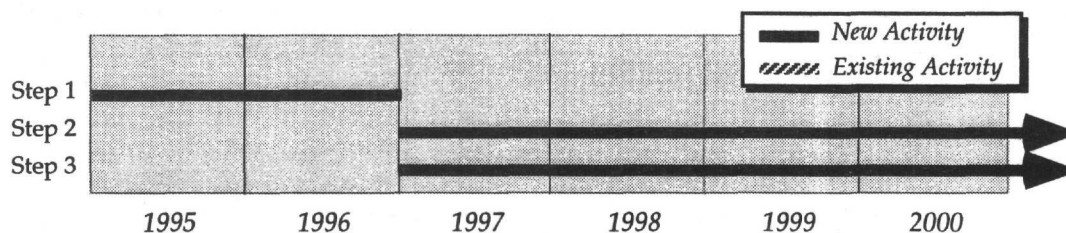
## ACTION PPE-6: Maintain a Citizen Pollution Reporting System

**What** Maintain a Citizen Pollution Reporting System for the bay region for all environmental media and secure long-term increased funding and staffing for the current pollution reporting system program. Currently, 21 various federal, state, and local-level agencies share responsibility for responding to environmental complaints reported by citizens in the five-county area surrounding the bay. The relative responsibility of each of these agencies is not always clear. The current one-call system reduces confusion involved in reporting pollution events, and should be continued.

### How

- Step 1** TNRCC will provide full-time staff support to maintain the Citizen's Pollution and Reporting Response System in its Houston office. The Galveston Bay Program will serve in an oversight capacity. As soon as feasible, TNRCC will transfer the Citizen Pollution Reporting and Response System from the region to the Program Office, and will seek funds to hire sufficient staff to maintain the hotline.
- Step 2** Galveston Bay Program will develop an expanded marketing campaign, will publicize the multi-media (i.e., soil, surface water, groundwater, air, etc.) objectives of the system, and will commence a fund-raising effort to add staff to this function.
- Step 3** Galveston Bay Program will work with other environmental agency managers to develop a standard computerized Incident Report Form and develop a multi-agency database. Galveston Bay Program and local environmental agencies will develop a memorandum of understanding to clearly define the responsibilities of the agencies regarding pollution reports.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program and TNRCC. Other participants: local environmental agencies.  
Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                   |                   |
|-------------------|-------------------|
| • Program.....    | \$ 471,750        |
| <b>TOTAL.....</b> | <b>\$ 471,750</b> |

Potential Sources of Funding: EPA, USDA, and NOAA.

**Regulatory Issues** None.

**Related Actions:** NPS-3.

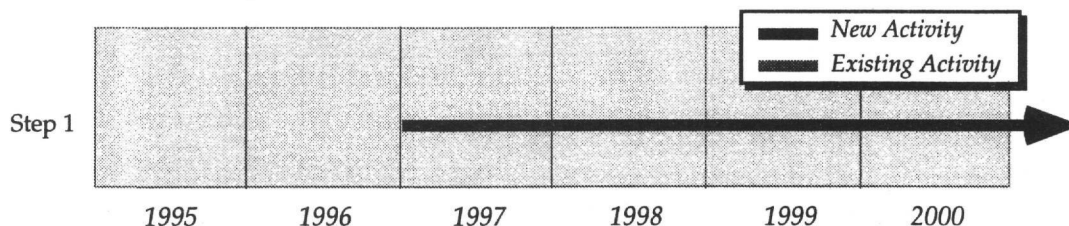
**ACTION PPE-7:****Develop and Implement a Strategy for Informing, Educating, and Providing Support for Local Government Involvement**

**What** Develop and implement a strategy for informing, educating, and providing support for local government involvement. Local governments frequently have difficulty keeping abreast of new environmental regulations and existing programs through which local environmental projects might potentially receive funding. Develop and implement a strategy for informing, educating, and providing support for local governments. Establish a program which acts as a clearinghouse of information.

**How**

**Step 1** Building on established programs conducted by HGAC, HGAC will implement a program which 1) acts as a clearinghouse of information for local government; 2) identifies available technical expertise and currently available assistance programs (such as the Municipal Assistance Program); 3) provides regulatory information; and 4) encourages the use of intergovernmental agreements to jointly utilize technical personnel.

Also see Action NPS-1 ; this action should be coordinated with NPS-1 beginning in FY 98.

**When**

**Where** Galveston Bay Program Area.

**Who** Lead entity: HGAC Other participants: Local governments, EPA and TNRCC. Role of Galveston Bay Program: Coordinating.

**Public Costs of New Actions (5 years)**

|                    |                   |
|--------------------|-------------------|
| • HGAC.....        | \$ 100,000        |
| • Program.....     | \$ 37,500         |
| <b>TOTAL .....</b> | <b>\$ 137,500</b> |

Potential Sources of Funding: EPA.

**Regulatory Issues** None.

**Related Actions:** NPS-1, NPS-2, NPS-4, NPS-7, SM-1, SM-2, and SM-3.

## ACTION PPE-8: Provide Assistance for User Groups Affected by Implementation of *The Galveston Bay Plan*

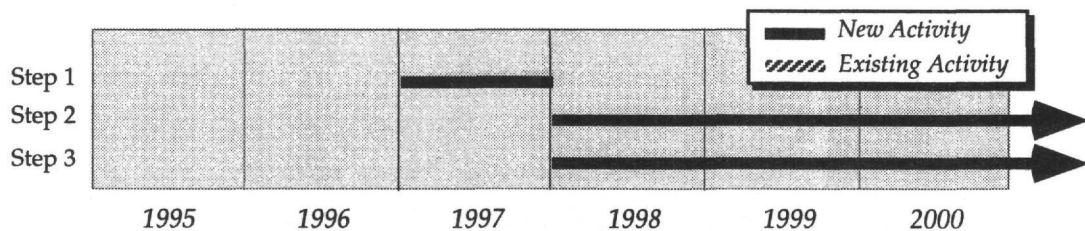
**What** Provide assistance for user groups affected by implementation of *The Galveston Bay Plan*. Emphasize an understanding of the link between user economic activity and the need for effective management by directly involving the publics that use the bay.

### How

- Step 1. The Galveston Bay Program will develop and update bay user's guides.  
 Step 2. The Galveston Bay Program will distribute the guides through retail outlets, agencies, and user groups. Other participants include GBF (combine with educational and general programs) and TPWD (maritime sanitation programs, licenses and passes).  
 Step 3. The Galveston Bay Program and resources agencies will conduct periodic workshops with user groups as new regulations or programs are implemented.

This action should be coordinated with Actions NPS-14, 14, and 15, beginning in FY 99, and with other new regulatory programs as they are developed.

### When



**Where** Galveston Bay Program Area.

**Who** Lead entity: Galveston Bay Program. Other participants: GBF, TPWD (maritime sanitation program), and TPWD (distribution of information with licenses). Role of Galveston Bay Program: Conduct action.

### Public Costs of New Actions (5 years)

|                   |                  |
|-------------------|------------------|
| • Program .....   | \$ 68,000        |
| <b>TOTAL.....</b> | <b>\$ 68,000</b> |

Potential Sources of Funding: EPA, NOAA, USDA, Department of Education, NSF, and private foundations.

**Regulatory Issues** None.

**Related Actions:** NPS-4, NPS-12, NPS-13, NPS-14, NPS-15, and NPS-16.